

1713

Patent
Attorney's Docket No. 032264-002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
Thomas J. TAYLOR et al.) Group Art Unit: 1713
Application No.: 10/038,739) Examiner: Marie L. Reddick
Filed: January 2, 2002) Confirmation No.: 3736
For: POLYCARBOXY/POLYOL)
FIBERGLASS BINDER)

AMENDMENT/REPLY TRANSMITTAL LETTER

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed is a reply for the above-identified patent application.

- ☐ A Petition for Extension of Time is also enclosed.
- ☐ A Terminal Disclaimer and the ☐ \$55.00 (2814) ☐ \$110.00 (1814) fee due under 37 C.F.R. § 1.20(d) are also enclosed.
- ☐ Also enclosed is/are _____.
- ☐ Small entity status is hereby claimed.
- ☐ Applicant(s) request continued examination under 37 C.F.R. § 1.114 and enclose the ☐ \$375.00 (2801) ☐ \$750.00 (1801) fee due under 37 C.F.R. § 1.17(e).
- ☐ Applicant(s) previously submitted ___, on ___, for which continued examination is requested.
- ☐ Applicant(s) request suspension of action by the Office until at least ___, which does not exceed three months from the filing of this RCE, in accordance with 37 C.F.R. § 1.103(c). The required fee under 37 C.F.R. § 1.17(i) is enclosed.
- ☐ A Request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) (1809/2809) is also enclosed.
- ☒ No additional claim fee is required.

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☐ An additional claim fee is required, and is calculated as shown below:

A M E N D E D C L A I M S					
	NO. OF CLAIMS	HIGHEST NO. OF CLAIMS PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	ADDT'L FEE
Total Claims		MINUS =		× \$18.00 (1202) =	
Independent Claims		MINUS =		× \$84.00 (1201) =	
If Amendment adds multiple dependent claims, add \$280.00 (1203)					
Total Amendment Fee					
If small entity status is claimed, subtract 50% of Total Amendment Fee					
TOTAL ADDITIONAL FEE DUE FOR THIS AMENDMENT					

☐ A claim fee in the amount of \$_____ is enclosed.

☐ Charge \$_____ to Deposit Account No. 02-4800.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800. This paper is submitted in duplicate.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: E. Joseph Gess
E. Joseph Gess
Registration No. 28,510

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Date: March 18, 2003



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RESPONSE

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

In complete response to the outstanding Official Action issued on December 18, 2002, Applicants offer the following comments.

In the Official Action, the Examiner initially rejects claims 1, 5, 7, 8 10, 11, 15, 17, 18 and 20 under 35 U.S.C. § 112, second paragraph, for being indefinite. For the following reasons, however, the Examiner's rejection is most respectfully traversed by Applicants.

The Examiner rejects the claims due to the recitation of "molecular weight". The molecular weight is a number average molecular weight. This is noted in Table 1 as Daltons, which method of determining the number average molecular weight is disclosed, for example, in U.S. Patent No. 5,932,665. One skilled in the art would understand that Daltons refers to a method of determining the number average molecular weight in

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accordance with the industry, e.g., as described in U.S. Patent No. 5,932,665. It is submitted, therefore, that the skilled artisan would understand the scope of the claims as written once read in the light of the specification.

Accordingly, it is respectfully submitted that the claims of record meet all requirements of 35 U.S.C. § 112. Favorable reconsideration and withdrawal of the Examiner's rejection under said section of the patent statute are therefore respectfully requested.

Claims 1, 7, 8, and 10-20 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,331,350. For the following reasons, however, the Examiner's rejection is most respectfully traversed by Applicants.

The claims of the '350 patent specifically recite certain pH ranges. The claims of the present application require a specific hydroxyl/carboxy ratio. Therefore, one could easily be covered by the claims of one patent, but not the other. Claim 1 of the '350 patent does not suggest claim 1 of the present application. Therefore, it is submitted that the double patenting rejection is improper, and ought to be withdrawn. The issuance of the present application as a patent with its pending claims, would not result in an improper extension of the "right to exclude" since the subject matter claimed in the '350 patent and the subject application are patentably distinct, and cover different subject matter.

Accordingly, favorable reconsideration and withdrawal of the Examiner's rejection of claims 1, 7, 8, and 10-20 under the judicially created doctrine of obviousness-type double patenting are respectfully requested.

Turning now to the art rejections of record, the Examiner rejects the claims of record, i.e., claims 1, 5, 7, 8, and 10-20, under 35 U.S.C. § 102(b) or (e), or under 35 U.S.C. § 103(a), over Arkens et al. (U.S. Patent No. 5,427,587); Arkens et al. (U.S. Patent No. 5,661,213); Arkens et al. (U.S. Patent No. 5,763,524); Arkens et al. (U.S. 6,136,916); Chen et al. (U.S. 6,274,661) or EP 583086. For the following reasons, however, the Examiner's rejection is most respectfully traversed by Applicants.

The present invention relates to a novel fiberglass binder which comprises a polycarboxy polymer and a polyol. Specifically, the binder relates to a polycarboxy polymer which has a molecular weight of around 5,000 or less, and a polyol which comprises triethanolamine. The use of these binders, with a specified hydroxyl/carboxy ratio and low molecular weight, results in few, if any, processing difficulties when preparing a fiberglass product. Sticking and balling of the fiberglass fibers during the preparation of the fiberglass mat become of minimal concern. The resulting product has also been shown to exhibit excellent recovery and rigidity properties.

The importance of using a low molecular binder and the specified hydroxyl/carboxy ratio is discussed on page 10 on the specification, beginning with line 26. Specifically, it has been found that for the low molecular weight polycarboxy polymers, where the molecular weight of the polycarboxy polymer is less than 5,000, and preferably approaches 2,000, the ratio should approach 0.7/1 for the most advantageous results. This finding is totally unexpected in light of the prior art.

The comparative data in the specification demonstrates the importance of this molecular weight and hydroxyl/carboxy ratio relationship. For example, on page 16 of the

specification, it is noted that the lowest molecular weight resin (resin D), which had a molecular weight of 2,000, with a stoichiometry of 70% (ratio of 0.7/1) gave the best acrylic bonded product performance (recovery and group).

Also attached hereto is a series of graphs which clearly demonstrate that surprising performance for acrylic resin binders is observed when the hydroxyl/carboxy ratio is in the range of from 0.6 to 0.8, and most particularly about 0.7. The graphs were prepared with an acrylic resin of a molecular weight less than 5,000. This combination of low molecular weight and specific hydroxyl/carboxy ratio, and its importance to maximum performance, is nowhere disclosed in the prior art.

The prior art does disclose fiberglass binders which include an acrylic acid polymer and a polyol. [Broad ranges for the ratios of equivalents of hydroxyl groups to equivalents of carboxy groups are disclosed] in the various references. However, [nowhere is there a specific example,] or any suggestion that one should employ a molecular weight of [less than 5,000] in combination with a hydroxyl/carboxy group equivalents ratio in a range of from 0.6 to 0.8/1. The surprising advantages realized by the presently claimed invention and demonstrated in the attached graphs is nowhere disclosed in the prior art.

Accordingly, it is respectfully submitted that the Arkens et al. '587; Arkens et al. '213; Arkens et al. '524; Arkens et al. '916; Chen et al. '661 and EP 583086 patent references cannot anticipate or render obvious Applicants' claimed invention. None of the references specifically disclose a binder comprised of a polycarboxy polymer having a molecular weight of 5,000 or less which must be used in combination with a polyol in amounts such that the ratio of equivalents of hydroxyl groups to equivalents of carboxy

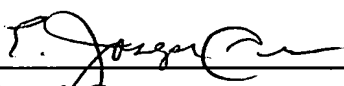
groups approaches 0.7/1, i.e., in a range of from 0.6/1 to 0.8/1. The advantages of the combination of the low molecular weight together with the narrow range of hydroxyl/carboxy ratio is nowhere disclosed in the prior art. Thus, the requisite motivation to practice Applicants' claimed invention simply does not exist in the prior art, and therefore the prior art cannot render the claimed invention obvious.

Accordingly, favorable reconsideration and withdrawal of the Examiner's rejection of the claims of record over Arkens et al. '587; Arkens et al. '213; Arkens et al. '524; Arkens et al. '916; Chen et al. '661 and EP 583086 are respectfully requested.

From the foregoing, further and favorable action in the form of the Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

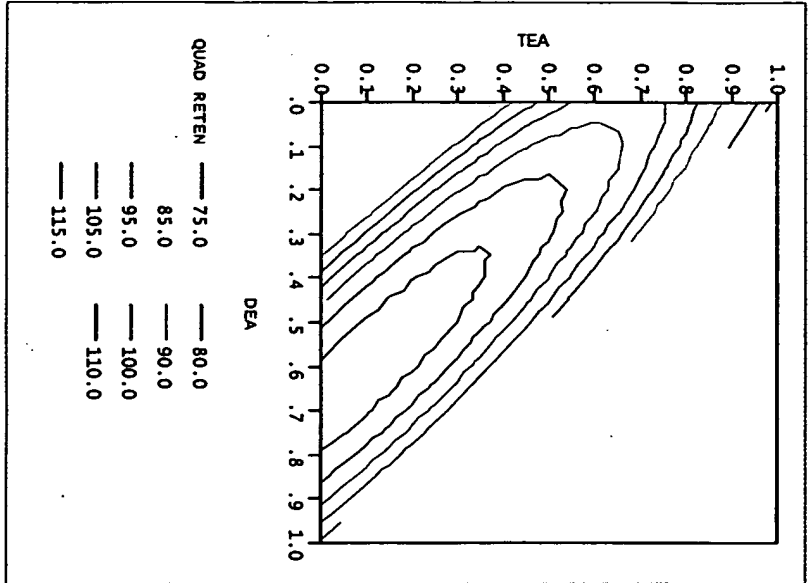
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Date: March 18, 2003

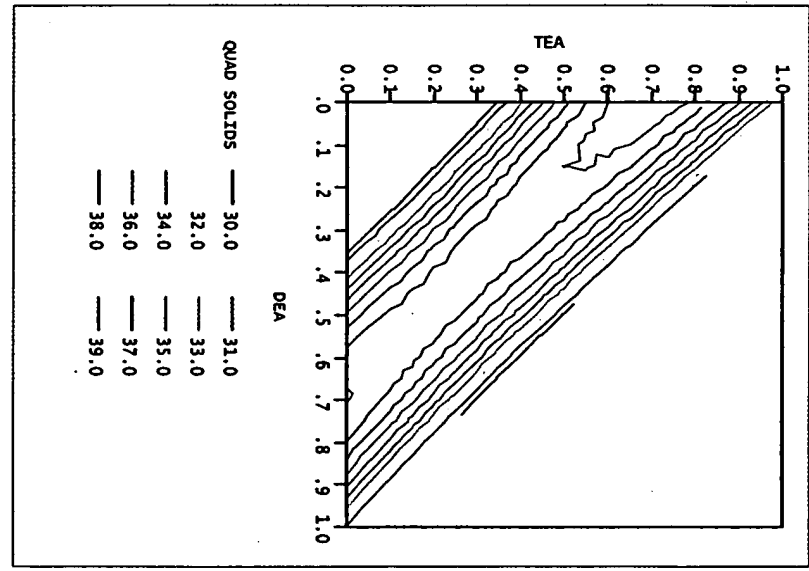
Product Performance vs. TEA and DEA

Contour Plot



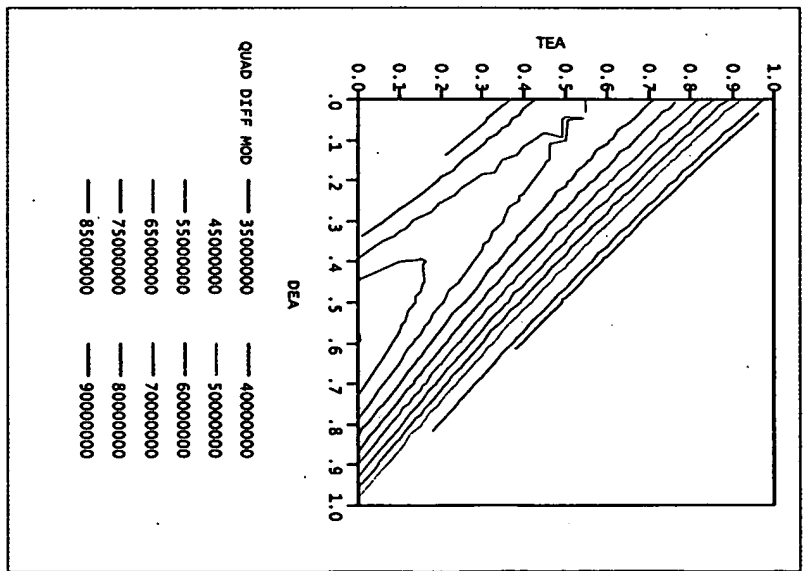
Tensile Strength

Contour Plot



%Solids

Contour Plot



Modulus Strength

